SYSTEMS PRESERVATION GUIDE
A Planning Process for Local Government Management of Transportation Networks

Minnesota Department of Transportation
Local Road Research Board
1. Leverage existing tools
2. Analyze existing road conditions
3. Comparison of funding versus road conditions
4. Make new tools available
   - Analysis and planning
   - Communications
5. Develop customized solutions for future needs
6. Promote awareness of best practices

Integral to each step is: **Education and Communication:**
- County Boards
- General Public
Project Partners

- LRRB
- MnDOT
- SRF

Braun Intertec
Richardson-Ricther

Pilot Counties

Otter Tail
Stearns
Anoka
Dakota
Freeborn
6 Step Process

Compile Resources

Identify Funding Gap

Prioritization Methods/System Recommendations

Development/Pilot Implementation

Develop Implementation Products (Statewide)

Final Report

Todays Focus
Creation of “Sketch Tool”

• **Purpose:**
  – Analyze current/future needs vs resources
  – Easy to use
  – Built-in flexibility for customization

• **Data sources:**
  – County road system characteristics
  – County maintenance practices and costs
  – Industry “typical” maintenance practices
### Sketch Tool

**Measures County Maintenance Practice vs Industry “typical”**

**Example:**

**Industry:** Seal Coat every 10 years  
County has 300 miles; therefore should sealcoat 30 mi/yr

**County currently seal coats 20 mi/year….”gap” is 10 miles**

10 x $17,500/mi = $175,000/yr

Do for all maintenance (Crack seal, overlay, etc.)

---

<table>
<thead>
<tr>
<th>Maintenance Standards</th>
<th>Ave. Cost/Mile (per county)</th>
<th>Miles/Yr</th>
<th>Current</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Overlay Program</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>2.7</td>
<td>$2,554,496</td>
<td>$24,667,765</td>
<td>$33,387,982</td>
<td>$57,280,205</td>
<td>$87,773,483</td>
</tr>
<tr>
<td>Overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>2.7</td>
<td>$2,554,496</td>
<td>$24,667,765</td>
<td>$33,387,982</td>
<td>$57,280,205</td>
<td>$87,773,483</td>
</tr>
<tr>
<td>Mill and overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>2.7</td>
<td>$2,554,496</td>
<td>$24,667,765</td>
<td>$33,387,982</td>
<td>$57,280,205</td>
<td>$87,773,483</td>
</tr>
<tr>
<td>Reclaim and overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>2.7</td>
<td>$2,554,496</td>
<td>$24,667,765</td>
<td>$33,387,982</td>
<td>$57,280,205</td>
<td>$87,773,483</td>
</tr>
<tr>
<td>Seal coating</td>
<td>$17,700.00</td>
<td>28.0</td>
<td>2.2</td>
<td>$1,873,059</td>
<td>$10,349,896</td>
<td>$23,550,140</td>
<td>$40,417,631</td>
<td>$61,294,496</td>
</tr>
<tr>
<td>Crack seal/crack filling</td>
<td>$5,600.00</td>
<td>305.5</td>
<td>0.0</td>
<td>$488,933</td>
<td>$2,701,105</td>
<td>$6,148,476</td>
<td>$10,548,292</td>
<td>$16,123,969</td>
</tr>
</tbody>
</table>

---

*If the gap is calculated as a negative number, the funding gap defaults to $0 rather than a negative dollar amount.*
## Sketch Tool

### CSAH

<table>
<thead>
<tr>
<th>Maintenance Standards</th>
<th>Ave. Cost/Mile (per county)</th>
<th>Miles/Yr</th>
<th>Miles/Yr</th>
<th>Miles/Yr</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Overlay Program</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Mill and overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Reclaim and overlay</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Seal coating</td>
<td>$57,700.00</td>
<td>330.9</td>
<td>25.1</td>
<td>0.0</td>
<td>$1,873,059</td>
<td>$10,349,836</td>
<td>$23,559,140</td>
<td>$40,417,931</td>
<td>$61,934,496</td>
</tr>
<tr>
<td>Crack seal/crack filling</td>
<td>$51,600.00</td>
<td>306.5</td>
<td>0.0</td>
<td>0.0</td>
<td>$5488,832</td>
<td>$2,701,105</td>
<td>$6,148,476</td>
<td>$10,548,389</td>
<td>$16,163,606</td>
</tr>
</tbody>
</table>

Total CSAH = $10,325,379

<table>
<thead>
<tr>
<th>Maintenance Standards</th>
<th>Ave. Cost/Mile (per county)</th>
<th>Miles/Yr</th>
<th>Miles/Yr</th>
<th>Miles/Yr</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Overlap</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Mill and overlap</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Reclaim and overlap</td>
<td>$190,000.00</td>
<td>18.3</td>
<td>14.4</td>
<td>14.4</td>
<td>$2,654,496</td>
<td>$14,667,765</td>
<td>$33,387,962</td>
<td>$57,280,205</td>
<td>$87,773,435</td>
</tr>
<tr>
<td>Seal coating</td>
<td>$57,700.00</td>
<td>330.9</td>
<td>25.1</td>
<td>0.0</td>
<td>$1,873,059</td>
<td>$10,349,836</td>
<td>$23,559,140</td>
<td>$40,417,931</td>
<td>$61,934,496</td>
</tr>
<tr>
<td>Crack seal/crack filling</td>
<td>$51,600.00</td>
<td>306.5</td>
<td>0.0</td>
<td>0.0</td>
<td>$5488,832</td>
<td>$2,701,105</td>
<td>$6,148,476</td>
<td>$10,548,389</td>
<td>$16,163,606</td>
</tr>
</tbody>
</table>

Total CSAH = $10,325,379

* If the gap is calculated as a negative number, the funding gap defaults to $0 rather than a negative dollar amount.
Gap Analysis: Otter Tail County

Miles of Asphalt Roads = 1,062
County State Highways = 927 *
County Roads = 135

Number of Vehicle Bridges = 75
Functionally Obsolete = 0
Structurally Deficient = 9
Adequate = 66

* Change caused by TH 235 Turnback (12-2-13) – 10 miles
Almost 60% are over 20 years old.
Otter Tail County
Annual Roadway Need - $15.2 million/yr.

Current Expenditure (2011)
$3.4 million/yr.

Year 1 Funding Gap
$11.8 million/yr.

Note: This GAP Analysis is for pavement preservation and does not include reconstruction.
Opportunity to Educate Elected Leaders
Opportunity to Educate Our Citizens
Provided a Long Range Comprehensive Plan
Provided a Framework for Exploring New Revenue
Hired Staff for Pavement Preservation/Management and Transportation Plan Management
Approaches to Reduce the “Gap”

- Adopt New Planning Strategies
- Change Size of Road System
- Consider Different Sources of Revenue
- Consider New Maintenance Methods
- Change the Level of Service
1. Interjurisdictional Transfers
2. Tiered Classification of County Roads (Different Maintenance Standards and Schedules)
3. Unpaved Low Volume Roads
4. Transportation Plan
5. Performance Measures/Standards
6. Project Prioritization
7. Revenue Enhancements
8. New Maintenance Techniques
## Selected System Preservation Strategies

<table>
<thead>
<tr>
<th>Selected System Preservation Strategies</th>
<th>Anoka</th>
<th>Stearns</th>
<th>Freeborn</th>
<th>Otter Tail</th>
<th>Dakota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jurisdictional Transfers</td>
<td>●</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>P</td>
</tr>
<tr>
<td>Tiered Classification of County Roads</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Unpaved Low Volume Roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Plans</td>
<td>P</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>P</td>
</tr>
<tr>
<td>Preservation Performance Measures</td>
<td>●</td>
<td></td>
<td>$</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Project Prioritization</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Revenue Enhancements</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>New Maintenance Techniques</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Decision Making Tools</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>New – Public Outreach</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

- ● = Selected Strategy
- $ = New Implementation
- P = Previously Implemented
Strategy: Tiered Classification of County Roads
Freeborn County

- Developed a Tiered System Approach
Strategy: Tiered Classification of County Roads
Freeborn County

<table>
<thead>
<tr>
<th>Application of 1st Seal Coat after a major repair (years)</th>
<th>Tier 1 Gold</th>
<th>Tier 2 Silver</th>
<th>Tier 3 Bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 4</td>
<td>0 - 6</td>
<td>0 - 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PCI that triggers Major Overlay</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65</td>
<td>50</td>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Average PCI (Current PCI)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; 80 (82)</td>
<td>&gt; 75 (80)</td>
<td>&gt; 70 (77)</td>
</tr>
</tbody>
</table>
New revenue will allow counties to expand and accelerate preservation initiatives:

- Wheelage tax
- Local Sales tax
- Gravel tax
- Bonding

- Special Assessments
- Negotiated Developer Fees
- Cooperative Cost Sharing
Strategy: Revenue Enhancements
Freeborn County

2016–2025 CIP Project Map
Without Tax

2016–2025 estimated construction cost $106M.
Estimated $37M revenue
$69M Deficit.

Note: Preventative Maintenance not included.
Strategy: Revenue Enhancements
Freeborn County

2016–2025 CIP Project Map
With Tax

2016–2025 estimated construction cost $106M. Estimated $57M revenue $49M Deficit.

Note: Preventative Maintenance not included.
Strategy: Revenue Enhancements
Freeborn County

Projected 2026 PQI
No tax

- Poor
- Fair
- Good
Strategy: Revenue Enhancements
Freeborn County

Projected 2026 PQI
With tax
Public Outreach Activities

- January 8, 2014
  Fergus Falls
- January 9, 2014
  Pelican Rapids
- January 28, 2014
  Perham
- January 30, 2014
  Henning
- April 2014 Meetings
  Same locations

Decision Points

- April 2014:
  County considers input, adopts new strategies
- Fall 2014
  Begin new strategies

Strategy: New – Public Outreach
Otter Tail County
Preparing the County’s First Transportation Plan

- 25 Member Project Steering Committee
- Applying a Tiered System Approach
  - System Preservation Strategy #2
- Applying Project Prioritization
  - System Preservation Strategy #6
The Plan Embraces Various System Preservation Strategies:

- Jurisdictional Transfers
- Tiered Classification of County Roads
- Performance Measures
- Project Prioritization
- Revenue Enhancements
  - Local Sales Tax
  - Wheelage Tax
  - Bonding
Next Steps

Compile Resources → Identify Funding Gap → Prioritization Methods/System Recommendations

Development/Pilot Implementation → Develop Implementation Products (Statewide) → Final Report
Next Steps

- Continue working with pilot counties to employ their selected strategies
- Present findings from the selected system preservation strategies to county boards
- Develop system plans and recommendations
- Develop implementation products (statewide)
- Prepare final plan